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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,926	04/13/2004	Paul C. Gillette	10277	4443
7590 Hercules Incorporated Hercules Plaza 1313 N. Market Street Wilmington, DE 19894-0001				
			EXAMINER	
			WHITE, EVERETT NMN	
			ART UNIT	PAPER NUMBER
			1623	
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			01/21/2010 PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/822,926

**Applicant(s)**

GILLETTE ET AL.

**Examiner**

EVERETT WHITE

**Art Unit**

1623

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 41-49, 51, 56-66, 94-96 and 98-103 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-49, 51, 56-66, 94-96 and 98-103 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. The amendment filed September 8, 2009 has been received, entered and carefully considered. The amendment affects the instant application accordingly:
  - (A) Claims 1-40, 50, 52-55, 67-93 and 97 have been canceled;
  - (C) Comments regarding Office Action have been provided drawn to:
    - (I) 103(a) rejections, which are maintained for the reasons of record.
2. Claims 41-49, 51, 56-66, 94-96 and 98-103 are pending in the case.
3. The text of those sections of Title 35, U. S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 112***  
***(New Ground of Rejection)***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 41-49, 51, 56-66 and 94-96 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 41, line 5, the metes and bounds cannot be determined for the phrase "bulk density of at least 20 g/100 ml" since the phrase does not recite an upper limit., which renders Claim 41 along with dependent Claims 42-49, 51, 56-66 and 94-96 indefinite since these dependent Claims do not clarify this error.

In Claim 44, the recitation that "the starting material is first treated with the etherifying agent and then treated with a base" lacks clear antecedent basis by being dependent from Claim 41 because step (b) under step (a) of Claim 1 discloses that the activated cellulose mixture is form from a starting material with a base before the activated cellulose mixture is reacted with at least one etherifying agent to form the cellulose ether derivative product, which renders Claim 44 indefinite.

In Claim 45, the recitation that "the starting material is first treated simultaneously with the etherifying agent and a base to form the cellulose ether derivative product"

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lacks clear antecedent basis by being dependent from Claim 41 because step (b) under step (a) of Claim 1 discloses that the activated cellulose mixture is formed from a starting material with a base before the activated cellulose mixture is reacted with at least one etherifying agent to form the cellulose ether derivative product, which renders Claim 45 indefinite.

Claims 63-65 suggest that the cellulose ether derivative produced in Claim 41, from which Claims 63-65 are dependent from, is a composition by reciting in Claim 63-65 that the cellulose ether derivative is a fraction of a cellulose ether derivative product. Hence, the term "cellulose ether derivative product" in Claims 63-65 lacks clear antecedent basis by being dependent from Claim 41 since Claim 41 is drawn a process of making a cellulose ether derivative, not a cellulose ether derivative product (composition).

#### ***Claim Rejections - 35 USC § 103***

6. Claims 41-46, 48, 49, 51, 56, 57, 63-66, 94-96 and 98-103 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hayakawa et al (DE 4034709 A) or Henry et al (US Patent No. 3,085,087) in view of Branan et al (US Patent No. 2,667,480) for the reasons disclosed below.

Applicants claim a process for making a cellulose ether derivative comprising (a) mixing a composition comprising a loose mass of comminuted raw cotton linter fibers that

(i) has a bulk density of at least 20 g/100 ml and

(ii) at least 50 wt% of the fibers in the loose mass passes through a US standard sieve size # 10 (2 mm opening) as a starting material with a base to form an activated cellulose mixture and,

(b) reacting the activated cellulose mixture with at least one etherifying agent to form a cellulose ether derivative product containing a cellulose ether derivative, wherein mixing power of the activated cellulose mixture is 5 % lower than the mixing power of the same process using comparably comminuted purified celluloses.

The Hayakawa et al publication shows that preparation of cellulose ether from raw cotton linters is well known in the art. The Hayakawa et al publication discloses production of cellulose ether by etherifying raw cotton linters with alkyl halide and optionally, alkylene oxide, in the presence of alkali.

The Henry et al patent also discloses preparation of a cellulose ether that embraces the process of the instant claims. The Henry et al patent discloses in Example 1 a process for preparing carboxymethylcellulose that involves sodium hydroxide in water, a diluent, comminuted cellulose, monochloroacetic acid being combined to form a slurry to produce the cellulose product. The sodium hydroxide and monochloroacetic acid used in the example embrace the base, sodium hydroxide, etherifying agent, metal salts of  $\alpha$ -halogenoalkanoates, and monochloroacetic acid disclosed in instant Claims 41, 44-46, 48 and 49. See column 4, lines 6-9, wherein the diluent is a water-miscible aliphatic alcohol selected from a group that includes ethanol, n-propanol, isopropanol, n-butanol, and tert-butanol, which embrace the organic diluents disclosed in instant Claims 94-96. The carboxymethyl cellulose produced in Example 1 embraces the carboxymethylcellulose disclosed in instant Claim 51. The Henry et al patent discloses in column 5, 2<sup>nd</sup> paragraph, that even-though, normally, the final product is the alkali salt of the carboxyalkyl ether, Henry et al discloses that the free acid form may be obtained by well known means, e.g., by treating the salt with a mineral acid or an ion exchange resin process. Henry et al also discloses that the product may be further processed by purifying and dehydrating, which comprises washing the product with a nonsolvent such as methanol, neutralizing the free alkali with acetic acid, draining off the liquid, washing the product again with anhydrous methanol, and finally air-drying the cellulose ether product (see column 4, lines 38-66). The further processing of the product disclosed in the Henry et al patent embraces the subject matter of instant Claims 56 and 57. The Henry et al patent further teaches that the degree of substitution (D.S.) desired is determined by the amount of etherifying agent employed, which is generally about 0.01-3.0 parts of etherifying agent (based on monochloroacetic acid) per part of cellulose (see column 6, 2<sup>nd</sup> paragraph). The

amount of etherifying agent disclosed in the Henry et al patent embraces at least part of the degree of substitution range disclosed in instant Claim 66.

The instantly claimed process for making a cellulose ether derivative differs from the process of the Hayakawa et al publication and Henry et al patent by claiming that the starting material or starting cellulose has a bulk density of at least 20 g/100 ml and a least 5 wt% of the fibers passes through a US standard sieve size # 10 (2 mm opening).

The Branan et al patent discloses manufacture of cellulose ether that involves the use of cellulose in granular form having a bulk density of about 30 pounds per cubic foot and an average particle size of less than 150 microns, which meet the instantly claimed bulk density and particle size limitations.

One of ordinary skill in this art would be motivated to combine the teaching of the Henry et al patent with the teaching of the Hayakawa et al publication and Branan et al patent since each of the references discloses preparation of cellulose ethers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the form of the starting cellulose material used in the preparation of cellulose ethers of the Hayakawa et al publication or Henry et al patent with cotton linters of the cited bulk density and particle size in view of the recognition in the art, as evidenced by the Branan et al patent, that preparation of cellulose ethers from cotton linter are effective in preparing cellulose products that are effective as an additive in drilling muds, as a thickener and dispensing agent in the manufacture of cosmetics and paints, as an additive in the food industry, and as a soil-suspending agent in soaps and detergents.

#### ***Response to Arguments***

7. Applicant's arguments filed September 8, 2009 have been fully considered but they are not persuasive. Applicants argue against the rejection on the ground that the Hayakawa publication does not teach or suggest using a raw cotton linter having a bulk density of at least 20 g/100 ml and wherein at least 50% of the fibers are in a loose mass that can pass through a US standard sieve size # 10 opening as a starting material. This argument is not persuasive since the Branan et al patent discussed this property of the claimed invention. Applicants argue that the Henry et al patent never

discloses or teaches the preparation of cellulose ethers from high bulk density raw cotton linters as claimed by Applicants. This argument is not persuasive since the Hayakawa publication discussed this property of the claimed invention. Applicants also argue that the Branan et al patent contains no teaching or suggestion to the person of ordinary skill in the art to substitute the high bulk density raw cotton liners as disclosed by applicants for the purified cellulose granular form having a bulk density of about 30 pounds per cubic foot starting materials taught as useful in its process. This argument is not persuasive since the instant claims recite comminuted raw cotton linter fibers which embraces the cellulose of the Branan et al patent in granular form. Accordingly, the rejection of Claims 41-46, 48, 49, 51, 56, 57, 63-66, 94-96 and 98-103 under 35 U.S.C. 103(a) as being unpatentable over the Hayakawa et al publication or the Henry et al patent in view of the Branan et al patent is maintained for the reasons of record.

8. Claim 47 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the Hayakawa et al or Henry et al patent in view of Branan et al patent as applied to Claims 41-46, 48, 49, 51, 56, 57, 66, 94-96 and 98-103 above, and further in view of the Savage (US Patent No. 2,949,452) for the reasons disclosed below.

Applicants claim a process for making a cellulose ether derivative wherein the base is selected from the group consisting of amines, quaternary ammonium hydroxides and mixture thereof.

The process for making a cellulose ether derivative described in the Hayakawa et al publication or the Henry et al patent in view of the Branan et al patent in the above rejection is incorporated into the current rejection.

The instantly claimed process for making a cellulose ether derivative differs from the Hayakawa et al publication or Henry et al patent in view of the Branan et al patent by claiming amines for use as the base, which is not disclosed in the Hayakawa et al publication, Henry et al patent and Branan et al patent.

However, the Savage patent suggests that the preparation of cellulose ethers using cotton linters as the starting material (see column 2, 3<sup>rd</sup> paragraph) and organic amines as the basic material (see column 2, line 26) is well known in the art.

One of ordinary skill in this art would be motivated to combine the teaching of the Hayakawa et al, Henry et al patent and Branam et al patent with the teaching of the Savage patent since each of the references disclose preparation of alkyl cellulose ethers that have similar utility such as use in drilling muds, thickeners for latexes, foods and other fields.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the base used in the preparation of cellulose ethers of the Hayakawa et al or Henry et al patent in view of the Branam et al patent with organic amines in view of the recognition in the art, as evidenced by the Savage patent, that organic amines used as bases in the preparation of cellulose ethers from cotton linter are effective in preparing cellulose products that are effective as an additive in drilling muds, as a thickener for latexes, and as an additive in the food industry.

#### ***Response to Arguments***

9. Applicant's arguments filed September 8, 2009 have been fully considered but they are not persuasive. Applicants argue against the rejection on the ground that the Savage patent is teaching and suggesting the use of cellulose sources which would exhibit substantially uniform penetration and would therefore not provide the motivation or suggestion to a person having ordinary skill in the art to substitute the less pure raw cotton linter for a cotton linter. This argument is not persuasive since the cotton linter used in the process of the Savage patent falls embraces the use of the raw cotton linter used in the process of the instant claims. The Savage patent is generally cited to show that preparation of cellulose ethers using cotton linters as the starting material (see column 2, 3<sup>rd</sup> paragraph) and organic amines as the basic material (see column 2, line 26) is well known in the art. Accordingly, the rejection of Claim 47 under 35 U.S.C. 103(a) as being unpatentable over the Hayakawa et al or Henry et al patent in view of Branam et al patent as applied to Claims 41-46, 48, 49, 51, 56, 57, 66, 94-96 and 98-103 above, and further in view of the Savage patent is maintained for the reasons of record.



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10. Claims 58-62 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the Hayakawa et al publication or Henry et al patent in view of the Branan et al patent as applied to Claims 41-46, 48, 49, 51, 56, 57, 66, 94-96 and 98-103 above, and further in view of Newbury et al (US Patent No. 6,069,355) for the reasons disclosed below.

Applicants claim a process for making an ether derivative, wherein the process further comprises the viscosity of the starting material or cellulose ether derivative being reduced by chemical, mechanical, irradiation and enzymatic means.

The process for making an ether derivative described in the Hayakawa et al publication or the Henry et al patent in view of the Branan et al patent in the above rejection is incorporated into the current rejection.

The instantly claimed process for making an ether derivative differs from the Hayakawa et al or Henry et al patent in view of the Branan et al patent by claiming a process that involve the viscosity of the starting material or cellulose ether derivative being reduced by chemical, mechanical, irradiation and enzymatic means.

The Newbury et al patent shows that the viscosity of cellulose raw material being reduce by irradiation, chemical treatment or enzymatic treatment is known in the art (see column 2, last line to column 3, line 4).

One of ordinary skill in this art would be motivated to combine the teachings of the Hayakawa et al or Henry et al patent in view of the Branan et al patent with the teachings of the Newbury et al patent since the documents disclose procedures for processing cellulose material.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to initially reduced the viscosity of the cellulose material as suggested in the Newbury et al patent before mixing the cellulose in a slurry for the preparation of an ether derivative as suggested in the Hayakawa et al or Henry et al patent in view of the Branan et al patent in view of the recognition in the art, as evidenced by the Newbury et al patent, that cellulose material of low viscosity can more thoroughly be mixed in a slurry which increases the quality of the final product.

***Response to Arguments***

11. Applicant's arguments filed September 8, 2009 have been fully considered but they are not persuasive. Applicants argue against the rejection on the ground that the Newbury et al patent does not provide the necessary teaching or suggestion lacking in the Hayakawa et al publication or Henry et al patent in view of the Branan et al patent as discussed above. This argument is not persuasive for the reasons provided in the rejection of the claims. The Newbury et al patent is generally cited to show that the viscosity of cellulose raw material being reduced by irradiation, chemical treatment or enzymatic treatment is known in the art. Accordingly, the rejection of Claims 58-62 under 35 U.S.C. 103(a) as being unpatentable over the Hayakawa et al publication or Henry et al patent in view of the Branan et al patent as applied to Claims 41-46, 48, 49, 51, 56, 57, 66, 94-96 and 98-103 above, and further in view of the Newbury et al patent is maintained for the reasons disclosed below.

#### ***Summary***

12. All the pending claims (Claims 41-49, 51, 56-66, 94-96 and 98-103) are rejected.

#### ***Examiner's Telephone Number, Fax Number, and Other Information***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is 571-272-0660. The examiner can normally be reached on 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Everett White/

Examiner, Art Unit 1623

/Shaojia Anna Jiang/

Supervisory Patent Examiner, Art Unit 1623